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CLAIMS

1. A process for manufacturing an article, made of a hydraulically-setting matrix, by molding, characterized in that it comprises the following  
5 steps:

a) injection of a slurry containing a hydraulic binder and mixing water into a mold;

b) vacuum extraction of the mixing water; and

c) demolding of the fresh article.

10 2. The process for manufacturing an article by molding as claimed in claim 1, characterized in that the injection of the slurry into the mold takes place by pressurizing an injection tank.

3. The process for manufacturing an article by molding as claimed in either of claims 1 and 2, characterized in that the injection of the slurry into  
15 the mold takes place by means of a peristaltic pump.

4. The process for manufacturing an article by molding as claimed in either of claims 1 and 2, characterized in that the injection of the slurry into the mold takes place by means of compressed air.

5. The process for manufacturing an article by molding as claimed in  
20 either of claims 1 and 2, characterized in that the injection takes place at low pressure, namely a pressure between 1.5 and 4 bar.

6. The process for manufacturing an article by molding as claimed in either of claims 1 and 2, characterized in that the injection takes place at high pressure, namely a pressure between 4 and 30 bar.

25 7. The process for manufacturing an article by molding as claimed in one of claims 1 to 6, characterized in that the water/cement ratio after the vacuum extraction step is between 0.25 and 0.5.

8. The process for manufacturing an article by molding as claimed in one of claims 1 to 7, characterized in that it allows articles to be produced  
30 with thicknesses between 0.2 and 5 cm.

9. The process for manufacturing an article by molding as claimed in one of claims 1 to 8, characterized in that the duration of the vacuum extraction step is less than 1 hour.

10. The process for manufacturing an article by molding as claimed in one of claims 1 to 9, characterized in that it comprises a step of hardening the article that takes place under relative humidity conditions between 90% and 100%.

5        11. The process for manufacturing an article by molding as claimed in claim 10, characterized in that the total duration of the hardening step is between 1 and 7 days.

10        12. The process for manufacturing an article by molding as claimed in either of claims 10 and 11, characterized in that the hardening step takes place in the presence of steam.

13. The process for manufacturing an article by molding as claimed in either of claims 10 and 11, characterized in that the hardening step takes place in an autoclave.

15        14. An article made of a hydraulically-setting matrix, obtained using the process of one of claims 1 to 13, characterized in that the composition of said article comprises a weight percent of hydraulic binder between 2% and 98% of the total mass, a weight percent of sand between 0.1% and 95% of the total mass, a weight percent of water between 5% and 75% of the total mass, a weight percent of reinforcement fibers between 0% and 50% of the total mass, a weight percent of other fibers between 0% and 50% of the total mass, a weight percent of polymers between 0% and 75% of the total mass, a weight percent of superplasticizer between 0% and 20% of the total mass and a weight percent of metakaolin between 0% and 50% of the total mass.

25        15. The article made of a hydraulically-setting matrix as claimed in claim 14, characterized in that the hydraulic binder comprises a cement, the cement may be a quick-setting cement with a high initial strength, a conventional Portland cement of whatever strength, aluminous cement, a low-alkali cement and in general any type of cement whatsoever, the choice of which must be taken into account when designing the article, so as always to maintain its hydraulic binder characteristic.

30        16. The article made of a hydraulically-setting matrix as claimed in claim 14 or 15, characterized in that the polymers may be of the acrylic or synthetic type, resins of various typologies or any other polymer that can

be used to modify the matrix and give the manufactured article a greater capacity in terms of various design and performance aspects that are expected of the article.

5 17. The article made of a hydraulically-setting matrix as claimed in claims 14 to 16, characterized in that it comprises other additives which may be accelerators, retarders, emulsifiers, air entrainers, occluded air agents, stabilizers, antioxidants, plasticizers, or thickeners, such as cellulose, cellulose fibers, cellulose hydroxides of any type, and other chemical thickeners, also starches or natural products that can be used to  
10 improve the cohesion and stability of the injected slurry, and in general any additive for the purpose of modifying the matrix according to the design and performance requirements expected of the article, and also possible production requirements.

15 18. The article made of a hydraulically-setting matrix as claimed in claims 14 to 17, characterized in that the reinforcement fibers may be chopped fibers, whole fibers, a mat of whatever class of chopped reinforcement fibers, a mat of continuous fibers, such as Cem-FIL®, or woven meshes.

20 19. The article made of a hydraulically-setting matrix as claimed in claims 14 to 18, characterized in that the reinforcement fibers may be synthetic fibers, such as polyamide, rayon, nylon, PVA and polypropylene fibers, and, in general, any organic or synthetic fiber of whatever class; mineral fibers, such as carbon fiber, basalt fiber and, in general, any mineral fiber of whatever class; glass fiber, such as E-, Z-, C- and AR-  
25 glass fiber and, in general, any glass fiber of any composition; metal fibers, such as copper, steel, stainless steel, iron, cast iron and ductile cast iron fibers and, in general, any fiber of metal type.